SEQUENCE LISTING

<110> Bander, Neil H.

<120> METHODS AND COMPOSITIONS FOR TREATING OR PREVENTING INSULIN-RELATED DISORDERS USING BINDING AGENTS SPECIFIC FOR PROSTATE SPECIFIC MEMBRANE ANTIGEN

<130> 10448-196001

<150> 60/422,396
<151> 2002-10-30

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<213> Mus musculus

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Asn Ile Asn Pro Asn Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe Glu
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Asp

<210> 3
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Gly Trp Asn Phe Asp Tyr
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Lys Ala Ser Gln Asp Val Gly Thr Ala Val Asp
 1   5   10

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<213> Mus musculus

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Trp Ala Ser Thr Arg His Thr
 1   5

<210> 6
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<212> PRT
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<400> 6
Gln Gln Tyr Asn Ser Tyr Pro Leu Thr
 1   5

<210> 7
<211> 82
<212> PRT
<213> Mus musculus

<400> 7
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Thr
 1   5   10   15
Ser Val Arg Ile Ser Cys Lys Thr Ser Trp Val Lys Gln Ser His Gly
            20   25   30
Lys Ser Leu Glu Trp Ile Gly Lys Ala Thr Leu Thr Val Asp Lys Ser
        35   40   45
Ser Ser Thr Ala Tyr Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser
    50   55   60
Ala Val Tyr Tyr Cys Ala Ala Trp Gly Gln Gly Thr Thr Leu Thr Val
65   70   75   80
Ser Ser

<210> 8
<211> 80
<212> PRT
<213> Mus musculus

<400> 8
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1   5   10   15
Asp Arg Val Ser Ile Ile Cys Trp Tyr Gln Gln Lys Pro Gly Gln Ser
            20   25   30
Pro Lys Leu Leu Ile Tyr Gly Val Pro Asp Arg Phe Thr Gly Ser Gly
        35   40   45
Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Asn Val Gln Ser Glu Asp
    50   55   60
Leu Ala Asp Tyr Phe Cys Phe Gly Ala Gly Thr Met Leu Asp Leu Lys
65   70   75   80

<210> 9
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 9
Glu Val Gln Leu Val Gln Ser Gly Pro Glu Val Lys Lys Pro Gly Ala
 1   5   10   15
Thr Val Lys Ile Ser Cys Lys Thr Ser
            20   25

<210> 10
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 10
Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile Gly
 1   5   10

<210> 11
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 11
Lys Ala Thr Leu Thr Val Asp Lys Ser Thr Asp Thr Ala Tyr Met Glu
 1   5   10   15
Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala
            20   25   30

<210> 12
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<212> PRT
<213> Artificial Sequence

<220>
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<400> 12
Trp Gly Gln Gly Thr Leu Leu Thr Val Ser Ser
 1   5   10

<210> 13
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<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J591

<400> 13

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Thr Ser Val Gly
1 5 10 15
Asp Arg Val Thr Leu Thr Cys
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<210> 14
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<400> 14
Trp Tyr Gln Gln Lys Pro Gly Pro Ser Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 15
<211> 32
<212> PRT
<213> Artificial Sequence

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<400> 15
Gly Ile Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
1 5 10 15
Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Asp Tyr Tyr Cys
20 25 30

<210> 16
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
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<400> 16
Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
1 5 10

<210> 17
<211> 82
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 17
Glu Val Gln Leu Val Gln Ser Gly Pro Glu Val Lys Lys Pro Gly Ala
1 5 10 15
Thr Val Lys Ile Ser Cys Lys Thr Ser Trp Val Lys Gln Ala Pro Gly
20 25 30
Lys Gly Leu Glu Trp Ile Gly Lys Ala Thr Leu Thr Val Asp Lys Ser

```
        35                  40                  45
Thr Asp Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr
    50                  55                  60
Ala Val Tyr Tyr Cys Ala Ala Trp Gly Gln Gly Thr Leu Leu Thr Val
65                  70                  75                  80
Ser Ser


<210> 18
<211> 80
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J591

<400> 18
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Thr Ser Val Gly
 1               5                  10                  15
Asp Arg Val Thr Leu Thr Cys Trp Tyr Gln Gln Lys Pro Gly Pro Ser
            20                  25                  30
Pro Lys Leu Leu Ile Tyr Gly Ile Pro Ser Arg Phe Ser Gly Ser Gly
        35                  40                  45
Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp
    50                  55                  60
Phe Ala Asp Tyr Tyr Cys Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
65                  70                  75                  80

<210> 19
<211> 115
<212> PRT
<213> Mus musculus

<400> 19
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Lys Lys Pro Gly Thr
 1               5                  10                  15
Ser Val Arg Ile Ser Cys Lys Thr Ser Gly Tyr Thr Phe Thr Glu Tyr
            20                  25                  30
Thr Ile His Trp Val Lys Gln Ser His Gly Lys Ser Leu Glu Trp Ile
        35                  40                  45
Gly Asn Ile Asn Pro Asn Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe
    50                  55                  60
Glu Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65                  70                  75                  80
Met Glu Leu Arg Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95
Ala Ala Gly Trp Asn Phe Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr
            100                 105                 110
Val Ser Ser
        115

<210> 20
<211> 107
<212> PRT
<213> Mus musculus

<400> 20
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Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
 1               5                  10                  15
Asp Arg Val Ser Ile Ile Cys Lys Ala Ser Gln Asp Val Gly Thr Ala
            20                  25                  30
Val Asp Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
        35                  40                  45
Tyr Trp Ala Ser Thr Arg His Thr Gly Val Pro Asp Arg Phe Thr Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Asn Val Gln Ser
65                  70                  75                  80
Glu Asp Leu Ala Asp Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                85                  90                  95
Thr Phe Gly Ala Gly Thr Met Leu Asp Leu Lys
            100                 105
```

<210> 21
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 21

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Glu Val Gln Leu Val Gln Ser Gly Pro Glu Val Lys Lys Pro Gly Ala
 1               5                  10                  15
Thr Val Lys Ile Ser Cys Lys Thr Ser Gly Tyr Thr Phe Thr Glu Tyr
            20                  25                  30
Thr Ile His Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile
        35                  40                  45
Gly Asn Ile Asn Pro Asn Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe
    50                  55                  60
Glu Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Thr Asp Thr Ala Tyr
65                  70                  75                  80
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95
Ala Ala Gly Trp Asn Phe Asp Tyr Trp Gly Gln Gly Thr Leu Leu Thr
            100                 105                 110
Val Ser Ser
        115
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<210> 22
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J591

<400> 22

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Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Thr Ser Val Gly
 1               5                  10                  15
Asp Arg Val Thr Leu Thr Cys Lys Ala Ser Gln Asp Val Gly Thr Ala
            20                  25                  30
Val Asp Trp Tyr Gln Gln Lys Pro Gly Pro Ser Pro Lys Leu Leu Ile
        35                  40                  45
Tyr Trp Ala Ser Thr Arg His Thr Gly Ile Pro Ser Arg Phe Ser Gly
```

```
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65                  70                  75                  80
Glu Asp Phe Ala Asp Tyr Tyr Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                85                  90                  95
Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
            100                 105

<210> 23
<211> 807
<212> DNA
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<220>
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<222> (122)...(166)

<221> CDS
<222> (249)...(605)

<223> deimmunized heavy chain J591

<400> 23
aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca     60
caaacagaaa aacatgagat cacagttctc tctacagtta ctgagcacac aggacctcac    120
c atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca         166
  Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr
   1               5                  10                  15

ggtaaggggc tcacagtagc aggcttgagg tctggacata tatatgggtg acaatgacat    226
ccactttgcc tttctctcca ca ggt gtc cac tcc gag gtc caa ctg gta cag      278
                        Gly Val His Ser Glu Val Gln Leu Val Gln
                                    20                  25

tct gga cct gaa gtg aag aag cct ggg gct aca gtg aag ata tcc tgc       326
Ser Gly Pro Glu Val Lys Lys Pro Gly Ala Thr Val Lys Ile Ser Cys
                30                  35                  40

aag act tct gga tac aca ttc act gaa tat acc ata cac tgg gtg aag       374
Lys Thr Ser Gly Tyr Thr Phe Thr Glu Tyr Thr Ile His Trp Val Lys
            45                  50                  55

cag gcc cct gga aag ggc ctt gag tgg att gga aac atc aat cct aac       422
Gln Ala Pro Gly Lys Gly Leu Glu Trp Ile Gly Asn Ile Asn Pro Asn
        60                  65                  70

aat ggt ggt acc acc tac aat cag aag ttc gag gac aag gcc aca cta       470
Asn Gly Gly Thr Thr Tyr Asn Gln Lys Phe Glu Asp Lys Ala Thr Leu
    75                  80                  85

act gta gac aag tcc acc gat aca gcc tac atg gag ctc agc agc cta       518
Thr Val Asp Lys Ser Thr Asp Thr Ala Tyr Met Glu Leu Ser Ser Leu
90                  95                  100                 105

aga tct gag gat act gca gtc tat tat tgt gca gct ggt tgg aac ttt       566
Arg Ser Glu Asp Thr Ala Val Tyr Tyr Cys Ala Ala Gly Trp Asn Phe
                110                 115                 120
```

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gac tac tgg ggc caa ggg acc ctg ctc acc gtc tcc tca ggtgagtcct       615
Asp Tyr Trp Gly Gln Gly Thr Leu Leu Thr Val Ser Ser
            125                 130

tacaacctct ctcttctatt cagcttaaat agattttact gcatttgttg gggggaaat    675
gtgtgtatct gaatttcagg tcatgaagga ctagggacac cttgggagtc agaaagggtc    735
attgggagcc cgggctgatg cagacagaca tcctcagctc ccagacttca tggccagaga    795
tttataggat cc                                                       807

<210> 24
<211> 807
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 24
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cgggctccca atgacccttt ctgactccca aggtgtccct agtccttcat gacctgaaat    120
tcagatacac acatttcccc cccaacaaat gcagtaaaat ctatttaagc tgaatagaag    180
agagaggttg taaggactca cctgaggaga cggtgagcag ggtcccttgg ccccagtagt    240
caaagttcca accagctgca caataataga ctgcagtatc ctcagatctt aggctgctga    300
gctccatgta ggctgtatcg gtggacttgt ctacagttag tgtggccttg tcctcgaact    360
tctgattgta ggtggtacca ccattgttag gattgatgtt tccaatccac tcaaggccct    420
ttccaggggc ctgcttcacc cagtgtatgg tatattcagt gaatgtgtat ccagaagtct    480
tgcaggatat cttcactgta gccccaggct tcttcacttc aggtccagac tgtaccagtt    540
ggacctcgga gtggacacct gtggagagaa aggcaaagtg gatgtcattg tcacccatat    600
atatgtccag acctcaagcc tgctactgtg agccccttac ctgtagctgt tgctaccaag    660
aagaggatga tacagctcca tcccatggtg aggtcctgtg tgctcagtaa ctgtagagag    720
aactgtgatc tcatgttttt ctgtttgtgg tatagacaaa cctatattta ccatgtagat    780
tcagaggatt tgcatattca taagctt                                       807

<210> 25
<211> 620
<212> DNA
<213> Artificial Sequence

<220>
<221> CDS
<222> (122)...(166)

<221> CDS
<222> (249)...(581)

<223> deimmunized light chain J591

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aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca     60
caaacagaaa aacatgagat cacagttctc tctacagtta ctgagcacac aggacctcac    120
c atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gct aca         166
  Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr
   1               5                  10                  15

ggtaaggggc tcacagtagc aggcttgagg tctggacata tatatgggtg acaatgacat    226
ccactttgcc tttctctcca ca ggt gtc cac tcc gac atc cag atg acc cag      278
```

```
                        Gly Val His Ser Asp Ile Gln Met Thr Gln
                                            20                  25

tct ccc tca tcc ctg tcc aca tca gta gga gac agg gtc acc ctc acc      326
Ser Pro Ser Ser Leu Ser Thr Ser Val Gly Asp Arg Val Thr Leu Thr
                30                  35                  40

tgt aag gcc agt caa gat gtg ggt act gct gta gac tgg tat caa cag      374
Cys Lys Ala Ser Gln Asp Val Gly Thr Ala Val Asp Trp Tyr Gln Gln
            45                  50                  55

aaa cca gga cca tct cct aaa cta ctg att tat tgg gca tcc act cgg      422
Lys Pro Gly Pro Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg
        60                  65                  70

cac act gga atc cct agt cgc ttc tca ggc agt gga tct ggg aca gac      470
His Thr Gly Ile Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
    75                  80                  85

ttc act ctc acc att tct agt ctt cag cct gaa gac ttt gca gat tat      518
Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Asp Tyr
90                  95                  100                 105

tac tgt cag caa tat aac agc tat cct ctc acg ttc ggt cct ggg acc      566
Tyr Cys Gln Gln Tyr Asn Ser Tyr Pro Leu Thr Phe Gly Pro Gly Thr
                110                 115                 120

aag gtg gac atc aaa cgtgagtaga atttaaactt tgcttcctca gttggatcc       620
Lys Val Asp Ile Lys
            125
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<210> 26
<211> 620
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized light chain J591

<400> 26

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ggatccaact gaggaagcaa agtttaaatt ctactcacgt ttgatgtcca ccttggtccc      60
aggaccgaac gtgagaggat agctgttata ttgctgacag taataatctg caaagtcttc     120
aggctgaaga ctagaaatgg tgagagtgaa gtctgtccca gatccactgc ctgagaagcg     180
actagggatt ccagtgtgcc gagtggatgc ccaataaatc agtagtttag gagatggtcc     240
tggtttctgt tgataccagt ctacagcagt acccacatct tgactggcct tacaggtgag     300
ggtgaccctg tctcctactg atgtggacag ggatgaggga gactgggtca tctggatgtc     360
ggagtggaca cctgtggaga gaaaggcaaa gtggatgtca ttgtcaccca tatatatgtc     420
cagacctcaa gcctgctact gtgagcccct tacctgtagc tgttgctacc aagaagagga     480
tgatacagct ccatcccatg gtgaggtcct gtgtgctcag taactgtaga gagaactgtg     540
atctcatgtt tttctgtttg tggtatagac aaacctatat ttaccatgta gattcagagg     600
atttgcatat tcataagctt                                                620
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<210> 27
<211> 134
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J591

<400> 27
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
 1   5   10   15
Val His Ser Glu Val Gln Leu Val Gln Ser Gly Pro Glu Val Lys Lys
            20   25   30
Pro Gly Ala Thr Val Lys Ile Ser Cys Lys Thr Ser Gly Tyr Thr Phe
        35   40   45
Thr Glu Tyr Thr Ile His Trp Val Lys Gln Ala Pro Gly Lys Gly Leu
    50   55   60
Glu Trp Ile Gly Asn Ile Asn Pro Asn Asn Gly Gly Thr Thr Tyr Asn
65   70   75   80
Gln Lys Phe Glu Asp Lys Ala Thr Leu Thr Val Asp Lys Ser Thr Asp
                85   90   95
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val
            100   105   110
Tyr Tyr Cys Ala Ala Gly Trp Asn Phe Asp Tyr Trp Gly Gln Gly Thr
        115   120   125
Leu Leu Thr Val Ser Ser
    130

<210> 28
<211> 126
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J591

<400> 28
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
 1   5   10   15
Val His Ser Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Thr
            20   25   30
Ser Val Gly Asp Arg Val Thr Leu Thr Cys Lys Ala Ser Gln Asp Val
        35   40   45
Gly Thr Ala Val Asp Trp Tyr Gln Gln Lys Pro Gly Pro Ser Pro Lys
    50   55   60
Leu Leu Ile Tyr Cys Ala Ser Thr Arg His Thr Gly Ile Pro Ser Arg
65   70   75   80
Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser
                85   90   95
Leu Gln Pro Glu Asp Phe Ala Asp Tyr Tyr Cys Gln Gln Tyr Asn Ser
            100   105   110
Tyr Pro Leu Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
        115   120   125

<210> 29
<211> 10
<212> PRT
<213> Mus musculus

<400> 29
Gly Phe Thr Phe Ser Asn Tyr Trp Met Asn

1 5 10

<210> 30
<211> 19
<212> PRT
<213> Mus musculus

<400> 30
Glu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu Ser
1 5 10 15
Val Lys Gly

<210> 31
<211> 5
<212> PRT
<213> Mus musculus

<400> 31
Arg Trp Asn Asn Phe
1 5

<210> 32
<211> 11
<212> PRT
<213> Mus musculus

<400> 32
Lys Ala Ser Glu Asn Val Gly Thr Tyr Val Ser
1 5 10

<210> 33
<211> 7
<212> PRT
<213> Mus musculus

<400> 33
Gly Ala Ser Asn Arg Phe Thr
1 5

<210> 34
<211> 9
<212> PRT
<213> Mus musculus

<400> 34
Gly Gln Ser Tyr Thr Phe Pro Tyr Thr
1 5

<210> 35
<211> 82
<212> PRT
<213> Mus musculus

<400> 35
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15

```
Ser Met Lys Leu Ser Cys Val Ala Ser Trp Val Arg Gln Ser Pro Glu
            20                  25                  30
Lys Gly Leu Glu Trp Val Ala Arg Val Ile Ile Ser Arg Asp Asp Ser
        35                  40                  45
Lys Ser Ser Val Tyr Leu Gln Met Asn Asn Leu Arg Ala Glu Asp Thr
    50                  55                  60
Gly Ile Tyr Tyr Cys Thr Arg Trp Gly Gln Gly Thr Thr Leu Thr Val
65                  70                  75                  80
Ser Ser
```

<210> 36
<211> 80
<212> PRT
<213> Mus musculus

```
<400> 36
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ile Ser Val Gly
 1               5                  10                  15
Glu Arg Val Thr Leu Thr Cys Trp Tyr Gln Gln Lys Pro Glu Gln Ser
            20                  25                  30
Pro Lys Met Leu Ile Tyr Gly Val Pro Asp Arg Phe Thr Gly Ser Gly
        35                  40                  45
Ser Ala Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Thr Glu Asp
    50                  55                  60
Leu Val Asp Tyr Tyr Cys Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
65                  70                  75                  80
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<210> 37
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

```
<400> 37
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1               5                  10                  15
Ser Met Lys Ile Ser Cys Val Ala Ser
            20                  25
```

<210> 38
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

```
<400> 38
Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala
 1               5                  10
```

<210> 39
<211> 32
<212> PRT

<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

<400> 39
Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser Val Tyr Leu Gln
 1   5   10   15
Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Thr Arg
            20   25   30

<210> 40
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

<400> 40
Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
 1   5   10

<210> 41
<211> 23
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 41
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1   5   10   15
Glu Arg Met Thr Leu Thr Cys
            20

<210> 42
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 42
Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile Tyr
 1   5   10   15

<210> 43
<211> 32
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 43
Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Ile
 1   5   10   15
Leu Thr Ile Ser Ser Val Gln Ala Glu Asp Leu Val Asp Tyr Tyr Cys
            20   25   30

<210> 44
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 44
Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
 1   5   10

<210> 45
<211> 82
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

<400> 45
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Ile Ser Cys Val Ala Ser Trp Val Arg Gln Ser Pro Glu
            20   25   30
Lys Gly Leu Glu Trp Val Ala Arg Val Ile Ile Ser Arg Asp Asp Ser
        35   40   45
Lys Ser Ser Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr
    50   55   60
Ala Val Tyr Tyr Cys Thr Arg Trp Gly Gln Gly Thr Thr Val Thr Val
65   70   75   80
Ser Ser

<210> 46
<211> 80
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 46
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1   5   10   15
Glu Arg Met Thr Leu Thr Cys Trp Tyr Gln Gln Lys Pro Thr Gln Ser
            20   25   30
Pro Lys Met Leu Ile Tyr Gly Val Pro Asp Arg Phe Ser Gly Ser Gly
        35   40   45
Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala Glu Asp
    50   55   60

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Leu Val Asp Tyr Tyr Cys Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
65                  70                  75                  80

<210> 47
<211> 116
<212> PRT
<213> Mus musculus

<400> 47
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1               5                  10                  15
Ser Met Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20                  25                  30
Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val
        35                  40                  45
Ala Glu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu
    50                  55                  60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65                  70                  75                  80
Val Tyr Leu Gln Met Asn Asn Leu Arg Ala Glu Asp Thr Gly Ile Tyr
                85                  90                  95
Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr Leu
            100                 105                 110
Thr Val Ser Ser
        115

<210> 48
<211> 107
<212> PRT
<213> Mus musculus

<400> 48
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ile Ser Val Gly
 1               5                  10                  15
Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Thr Gly
    50                  55                  60
Ser Gly Ser Ala Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Thr
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105

<210> 49
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

<400> 49
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
```

```
 1               5                  10                  15
Ser Met Lys Ile Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20                  25                  30
Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val
        35                  40                  45
Ala Glu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu
    50                  55                  60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65                  70                  75                  80
Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
                85                  90                  95
Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr Val
            100                 105                 110
Thr Val Ser Ser
        115
```

<210> 50
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 50

```
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1               5                  10                  15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105
```

<210> 51
<211> 348
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-4

<400> 51

```
gaagtgaaac ttgaggagtc tggaggaggc ttggtgcaac ctggagggtc catgaaaatc      60
tcctgtgttg cctctggatt cactttcagt aattactgga tgaactgggt ccgccagtct     120
ccagagaagg ggcttgagtg ggttgctgaa attagatcgc aatctaataa ttttgcaaca     180
cattatgcgg agtctgtgaa agggagggtc atcatctcaa gagatgattc caagagtagt     240
gtctacctgc aaatgaacag tttgagagct gaagacactg ccgtttatta ctgtaccagg     300
cgatggaata atttctgggg ccaaggcacc actgtcacag tctcctca                 348
```

<210> 52

<211> 321
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-5

<400> 52
aacattgtaa tgacccaatt tcccaaatcc atgtccgcct cagcaggaga gaggatgacc 60
ttgacctgca aggccagtga gaatgtgggt acttatgtgt cctggtatca acagaaacca 120
acacagtctc ctaagatgtt gatatacggg gcatccaacc ggttcactgg ggtcccagat 180
cgcttctccg gcagtggatc tggaacagat ttcattctga ccatcagcag tgtgcaggca 240
gaagaccttg tagattatta ctgtggacag agttacacct ttccgtacac gttcggaggg 300
gggaccaagc tggaaatgaa g 321

<210> 53
<211> 810
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-1

<221> CDS
<222> (122)...(160)

<221> CDS
<222> (249)...(608)

<400> 53
aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca 60
caaacagaaa aacatgagat cacagttctc tctacagtta ctgagcacac aggacctcac 120
c atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gctacaggta 170
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr
1 5 10

aggggctcac agtagcaggc ttgaggtctg gacatatata tgggtgacaa tgacatccac 230
tttgcctttc tctccaca ggt gtc cac tcc gaa gtg aaa ctt gag gag tct 281
Gly Val His Ser Glu Val Lys Leu Glu Glu Ser
15 20

gga gga ggc ttg gtg caa cct gga ggg tcc atg aaa atc tcc tgt aaa 329
Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Ile Ser Cys Lys
25 30 35 40

gcc tct gga ttc act ttc agt aat tac tgg atg aac tgg gtc cgc cag 377
Ala Ser Gly Phe Thr Phe Ser Asn Tyr Trp Met Asn Trp Val Arg Gln
45 50 55

act cca gag aag ggg ctt gag tgg gtt gct ctt att aga tcg caa tct 425
Thr Pro Glu Lys Gly Leu Glu Trp Val Ala Leu Ile Arg Ser Gln Ser
60 65 70

aat aat ttt gca aca cat tat gcg gag tct gtg aaa ggg agg gtc atc 473
Asn Asn Phe Ala Thr His Tyr Ala Glu Ser Val Lys Gly Arg Val Ile
75 80 85

```
atc tca aga gat gat tcc aag agt agt gtc tac ctg caa atg aac agt      521
Ile Ser Arg Asp Asp Ser Lys Ser Ser Val Tyr Leu Gln Met Asn Ser
     90                  95                  100

ttg aga gct gaa gac act gcc gtt tat tac tgt acc agg cga tgg aat      569
Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys Thr Arg Arg Trp Asn
105                 110                 115                 120

aat ttc tgg ggc caa ggc acc act gtc aca gtc tcc tca ggtgagtcct       618
Asn Phe Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
                125                 130

tacaacctct ctcttctatt cagcttaaat agattttact gcatttgttg gggggaaat    678
gtgtgtatct gaatttcagg tcatgaagga ctagggacac cttgggagtc agaaagggtc    738
attgggagcc cgggctgatg cagacagaca tcctcagctc ccagacttca tggccagaga    798
tttataggat cc                                                       810

<210> 54
<211> 133
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-1

<400> 54
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Gly Val His
 1               5                  10                  15
Ser Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly
            20                  25                  30
Gly Ser Met Lys Ile Ser Cys Lys Ala Ser Gly Phe Thr Phe Ser Asn
        35                  40                  45
Tyr Trp Met Asn Trp Val Arg Gln Thr Pro Glu Lys Gly Leu Glu Trp
    50                  55                  60
Val Ala Leu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala
65                  70                  75                  80
Glu Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser
                85                  90                  95
Ser Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val
            100                 105                 110
Tyr Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr
        115                 120                 125
Val Thr Val Ser Ser
    130

<210> 55
<211> 810
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-1

<400> 55
ggatcctata aatctctggc catgaagtct gggagctgag gatgtctgtc tgcatcagcc     60
cgggctccca atgacccttt ctgactccca aggtgtccct agtccttcat gacctgaaat    120
tcagatacac acatttcccc cccaacaaat gcagtaaaat ctatttaagc tgaatagaag    180
```

```
agagaggttg taaggactca cctgaggaga ctgtgacagt ggtgccttgg ccccagaaat     240
tattccatcg cctggtacag taataaacgg cagtgtcttc agctctcaaa ctgttcattt     300
gcaggtagac actactcttg gaatcatctc ttgagatgat gaccctccct ttcacagact     360
ccgcataatg tgttgcaaaa ttattagatt gcgatctaat aagagcaacc cactcaagcc     420
ccttctctgg agtctggcgg acccagttca tccagtaatt actgaaagtg aatccagagg     480
ctttacagga gattttcatg gaccctccag gttgcaccaa gcctcctcca gactcctcaa     540
gtttcacttc ggagtggaca cctgtggaga gaaaggcaaa gtggatgtca ttgtcaccca     600
tatatatgtc cagacctcaa gcctgctact gtgagccccc tacctgtagc tgttgctacc     660
aagaagagga tgatacagct ccatcccatg gtgaggtcct gtgtgctcag taactgtaga     720
gagaactgtg atctcatgtt tttctgtttg tggtatagac aaacctatat ttaccatgta     780
gattcagagg atttgcatat tcataagctt                                     810

<210> 56
<211> 620
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-1

<221> CDS
<222> (122)...(160)

<221> CDS
<222> (249)...(581)

<400> 56
aagcttatga atatgcaaat cctctgaatc tacatggtaa atataggttt gtctatacca      60
caaacagaaa aacatgagat cacagttctc tctacagtta ctgagcacac aggacctcac     120
c atg gga tgg agc tgt atc atc ctc ttc ttg gta gca aca gctacaggta      170
  Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr
   1               5                  10

aggggctcac agtagcaggc ttgaggtctg gacatatata tgggtgacaa tgacatccac     230
tttgcctttc tctccaca ggt gtc cac tcc aac att gta atg acc caa tcc        281
                    Gly Val His Ser Asn Ile Val Met Thr Gln Ser
                         15                  20

ccc aaa tcc atg tcc gcc tca gca gga gag agg atg acc ttg acc tgc       329
Pro Lys Ser Met Ser Ala Ser Ala Gly Glu Arg Met Thr Leu Thr Cys
 25                  30                  35                  40

aag gcc agt gag aat tcc ggt act tat gtg tcc tgg tat caa cag aaa       377
Lys Ala Ser Glu Asn Ser Gly Thr Tyr Val Ser Trp Tyr Gln Gln Lys
                 45                  50                  55

cca aca cag tct cct aag atg ttg ata tac ggg gca tcc aac cgg ttc       425
Pro Thr Gln Ser Pro Lys Met Leu Ile Tyr Gly Ala Ser Asn Arg Phe
             60                  65                  70

act ggg gtc cca gat cgc ttc tcc ggc agt gga tct gga aca gat ttc       473
Thr Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe
         75                  80                  85

att ctg acc gcc agc agt gtg cag gca gaa gac cct gta gat tat tac       521
Ile Leu Thr Ala Ser Ser Val Gln Ala Glu Asp Pro Val Asp Tyr Tyr
     90                  95                  100
```

```
tgt gga cag agt tac acc ttt ccg tac acg ttc gga ggg ggg acc aag      569
Cys Gly Gln Ser Tyr Thr Phe Pro Tyr Thr Phe Gly Gly Gly Thr Lys
105                 110                 115                 120

ctg gaa atg aag cgtgagtaga atttaaactt tgcttcctca gttggatcc          620
Leu Glu Met Lys
```

<210> 57
<211> 124
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-1

<400> 57

```
Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Gly Val His
 1               5                  10                  15
Ser Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Ala Ser Ala
            20                  25                  30
Gly Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Ser Gly Thr
        35                  40                  45
Tyr Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu
    50                  55                  60
Ile Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser
65                  70                  75                  80
Gly Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ala Ser Ser Val Gln
                85                  90                  95
Ala Glu Asp Pro Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro
            100                 105                 110
Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
        115                 120
```

<210> 58
<211> 620
<212> DNA
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-1

<400> 58

```
ggatccaact gaggaagcaa agtttaaatt ctactcacgc ttcatttcca gcttggtccc      60
ccctccgaac gtgtacggaa aggtgtaact ctgtccacag taataatcta cagggtcttc     120
tgcctgcaca ctgctggcgg tcagaatgaa atctgttcca gatccactgc cggagaagcg     180
atctgggacc ccagtgaacc ggttggatgc cccgtatatc aacatcttag gagactgtgt     240
tggtttctgt tgataccagg acacataagt accggaattc tcactggcct tgcaggtcaa     300
ggtcatcctc tctcctgctg aggcggacat ggatttgggg gattgggtca ttacaatgtt     360
ggagtggaca cctgtggaga gaaaggcaaa gtggatgtca ttgtcaccca tatatatgtc     420
cagacctcaa gcctgctact gtgagcccct tacctgtagc tgttgctacc aagaagagga     480
tgatacagct ccatcccatg gtgaggtcct gtgtgctcag taactgtaga gagaactgtg     540
atctcatgtt tttctgtttg tggtatagac aaacctatat ttaccatgta gattcagagg     600
atttgcatat tcataagctt                                                620
```

<210> 59
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-2

<400> 59
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Ile Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Trp Met Asn Trp Val Arg Gln Thr Pro Glu Lys Gly Leu Glu Trp Val
        35   40   45
Ala Leu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu
    50   55   60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65   70   75   80
Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
                85   90   95
Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr Val
            100   105   110
Thr Val Ser Ser
        115

<210> 60
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized heavy chain J415-3

<400> 60
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Ile Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Trp Met Asn Trp Val Arg Gln Thr Pro Glu Lys Gly Leu Glu Trp Val
        35   40   45
Ala Glu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu
    50   55   60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65   70   75   80
Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
                85   90   95
Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr Val
            100   105   110
Thr Val Ser Ser
        115

<210> 61
<211> 116
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 61
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Ile Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Trp Met Asn Trp Val Arg Gln Thr Pro Glu Lys Gly Leu Glu Trp Val
        35   40   45
Ala Glu Ile Arg Ser Gln Ser Asn Asn Phe Ala Thr His Tyr Ala Glu
    50   55   60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65   70   75   80
Val Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr
                85   90   95
Tyr Cys Thr Arg Arg Trp Asn Asn Phe Trp Gly Gln Gly Thr Thr Val
            100   105   110
Thr Val Ser Ser
        115

<210> 62
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-2

<400> 62
Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Ala Ser Ala Gly
 1   5   10   15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20   25   30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35   40   45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50   55   60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ala Ser Ser Val Gln Ala
65   70   75   80
Glu Asp Pro Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85   90   95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100   105

<210> 63
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-3

<400> 63
Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Ala Ser Ala Gly
 1   5   10   15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr

```
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ala Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105
```

<210> 64
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-4

<400> 64

```
Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser Ala Ser Ala Gly
 1               5                  10                  15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105
```

<210> 65
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-6

<400> 65

```
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1               5                  10                  15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
```

```
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105

<210> 66
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-7

<400> 66
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1               5                  10                  15
Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105

<210> 67
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
<223> deimmunized light chain J415-8

<400> 67
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1               5                  10                  15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Ser Gly Thr Tyr
            20                  25                  30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Met Leu Ile
        35                  40                  45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50                  55                  60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65                  70                  75                  80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85                  90                  95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100                 105

<210> 68
<211> 107
<212> PRT
<213> Artificial Sequence

<220>
```

<223> majority sequence

<400> 68
Asn Ile Val Met Thr Gln Phe Pro Lys Ser Met Ser Ala Ser Ala Gly
 1   5   10   15
Glu Arg Met Thr Leu Thr Cys Lys Ala Ser Glu Asn Val Gly Thr Tyr
            20   25   30
Val Ser Trp Tyr Gln Gln Lys Pro Thr Gln Ser Pro Lys Met Leu Ile
        35   40   45
Tyr Gly Ala Ser Asn Arg Phe Thr Gly Val Pro Asp Arg Phe Ser Gly
    50   55   60
Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr Ile Ser Ser Val Gln Ala
65   70   75   80
Glu Asp Leu Val Asp Tyr Tyr Cys Gly Gln Ser Tyr Thr Phe Pro Tyr
                85   90   95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Met Lys
            100   105

<210> 69
<211> 123
<212> PRT
<213> Mus musculus

<400> 69
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val
        35   40   45
Ala Glu Ile Arg Leu Lys Ser Asp Asn Tyr Ala Thr His Tyr Ala Glu
    50   55   60
Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ser
65   70   75   80
Val Tyr Leu Gln Met Asn Asn Leu Arg Ala Glu Asp Thr Gly Ile Tyr
                85   90   95
Tyr Cys Thr Thr Gly Gly Tyr Gly Gly Arg Arg Ser Trp Phe Ala Tyr
            100   105   110
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115   120

<210> 70
<211> 123
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 70
Glu Val Lys Leu Glu Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly
 1   5   10   15
Ser Met Lys Leu Ser Cys Val Ala Ser Gly Phe Thr Phe Ser Asn Tyr
            20   25   30
Trp Met Asn Trp Val Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val
        35   40   45
Ala Glu Ile Arg Leu Gln Ser Asp Asn Phe Ala Thr His Tyr Ala Glu

```
    50                  55                  60
Ser Val Lys Gly Arg Val Ile Ile Ser Arg Asp Asp Ser Lys Ser Ser
65                  70                  75                  80
Val Tyr Leu Gln Met Asn Asn Leu Arg Ala Glu Asp Thr Gly Ile Tyr
                85                  90                  95
Tyr Cys Thr Thr Gly Gly Tyr Gly Gly Arg Arg Ser Trp Asn Ala Phe
            100                 105                 110
Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
        115                 120
```

<210> 71
<211> 113
<212> PRT
<213> Mus musculus

<400> 71

```
Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
 1               5                  10                  15
Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
            20                  25                  30
Gly Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45
Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
                85                  90                  95
Asp Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
            100                 105                 110
Lys
```

<210> 72
<211> 113
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 72

```
Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
 1               5                  10                  15
Glu Lys Val Thr Leu Ser Cys Lys Ala Ser Glu Ser Leu Leu Asn Val
            20                  25                  30
Gly Asn Gln Lys Thr Tyr Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45
Ser Pro Lys Leu Leu Ile Tyr Gly Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Ile Leu Thr
65                  70                  75                  80
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gly Asn
                85                  90                  95
Ser Tyr Ser Phe Pro Leu Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu
            100                 105                 110
Lys
```

<210> 73
<211> 354
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(354)

<400> 73
```
gag gtc cag ctg cag cag tct gga cct gag ctg gtt aag cct ggg gct       48
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1               5                  10                  15

tca gtg aag atg tcc tgc aag gct tct gga tac aca ttc act ggc tat       96
Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly Tyr
            20                  25                  30

gtt atg cac tgg gtg aag cag aag cct gga cag gtc ctt gag tgg att      144
Val Met His Trp Val Lys Gln Lys Pro Gly Gln Val Leu Glu Trp Ile
        35                  40                  45

gga tat att aat cct tac aat gat gtt act agg tat aat ggg aag ttc      192
Gly Tyr Ile Asn Pro Tyr Asn Asp Val Thr Arg Tyr Asn Gly Lys Phe
    50                  55                  60

aaa ggc aag gcc aca ctg acc tca gac aaa tat tcc agc aca gcc tac      240
Lys Gly Lys Ala Thr Leu Thr Ser Asp Lys Tyr Ser Ser Thr Ala Tyr
65                  70                  75                  80

atg gag ctc agc ggc ctg acc tct gag gac tct gcg gtc tat tac tgt      288
Met Glu Leu Ser Gly Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95

gca aga ggg gag aac tgg tac tac ttt gac tcc tgg ggc cga ggc gcc      336
Ala Arg Gly Glu Asn Trp Tyr Tyr Phe Asp Ser Trp Gly Arg Gly Ala
            100                 105                 110

act ctc aca gtc tcc tca                                             354
Thr Leu Thr Val Ser Ser
        115
```

<210> 74
<211> 118
<212> PRT
<213> Mus musculus

<400> 74
```
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1               5                  10                  15
Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly Tyr
            20                  25                  30
Val Met His Trp Val Lys Gln Lys Pro Gly Gln Val Leu Glu Trp Ile
        35                  40                  45
```

```
Gly Tyr Ile Asn Pro Tyr Asn Asp Val Thr Arg Tyr Asn Gly Lys Phe
    50                  55                  60
Lys Gly Lys Ala Thr Leu Thr Ser Asp Lys Tyr Ser Ser Thr Ala Tyr
65                  70                  75                  80
Met Glu Leu Ser Gly Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
                85                  90                  95
Ala Arg Gly Glu Asn Trp Tyr Tyr Phe Asp Ser Trp Gly Arg Gly Ala
            100                 105                 110
Thr Leu Thr Val Ser Ser
        115
```

<210> 75
<211> 354
<212> DNA
<213> Mus musculus

<400> 75
tgaggagact gtgagagtgg cgcctcggcc ccaggagtca aagtagtacc agttctcccc 60
tcttgcacag taatagaccg cagagtcctc agaggtcagg ccgctgagct ccatgtaggc 120
tgtgctggaa tatttgtctg aggtcagtgt ggccttgcct ttgaacttcc cattatacct 180
agtaacatca ttgtaaggat taatatatcc aatccactca aggacctgtc caggcttctg 240
cttcacccag tgcataacat agccagtgaa tgtgtatcca gaagccttgc aggacatctt 300
cactgaagcc ccaggcttaa ccagctcagg tccagactgc tgcagctgga cctc 354

<210> 76
<211> 333
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(333)

<400> 76

```
gac att gtg ctg acc caa tct cca gct tct ttg gct gtg tct cta gga  48
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1               5                  10                  15

cag agg gcc acc ata tcc tgc aga gcc agt gaa agt att gat agt tat  96
Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Ile Asp Ser Tyr
            20                  25                  30

gac aat act ttt atg cac tgg tac cag cag aaa cca gga cag cca ccc 144
Asp Asn Thr Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
        35                  40                  45

aac ctc ctc atc ttt cgt gca tcc atc cta gaa tct ggg atc cct gcc 192
Asn Leu Leu Ile Phe Arg Ala Ser Ile Leu Glu Ser Gly Ile Pro Ala
    50                  55                  60

agg ttc agt ggc agt ggg tct ggg aca gac ttc acc ctc acc att tat 240
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Tyr
65                  70                  75                  80

cct gtg gag gct gat gat gtt gca acc tat tac tgt cac caa agt att 288
Pro Val Glu Ala Asp Asp Val Ala Thr Tyr Tyr Cys His Gln Ser Ile
                85                  90                  95
```

```
gag gat ccg tac acg ttc gga ggg ggg acc aag ctg gaa ata aaa          333
Glu Asp Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105                 110


<210> 77
<211> 111
<212> PRT
<213> Mus musculus

<400> 77
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1               5                  10                  15
Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Ile Asp Ser Tyr
            20                  25                  30
Asp Asn Thr Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
        35                  40                  45
Asn Leu Leu Ile Phe Arg Ala Ser Ile Leu Glu Ser Gly Ile Pro Ala
    50                  55                  60
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Tyr
65                  70                  75                  80
Pro Val Glu Ala Asp Asp Val Ala Thr Tyr Tyr Cys His Gln Ser Ile
                85                  90                  95
Glu Asp Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105                 110

<210> 78
<211> 333
<212> DNA
<213> Mus musculus

<400> 78
ttttatttcc agcttggtcc cccctccgaa cgtgtacgga tcctcaatac tttggtgaca       60
gtaataggtt gcaacatcat cagcctccac aggataaatg gtgagggtga agtctgtccc      120
agacccactg ccactgaacc tggcagggat cccagattct aggatggatg cacgaaagat      180
gaggaggttg ggtggctgtc ctggtttctg ctggtaccag tgcataaaag tattgtcata      240
actatcaata ctttcactgg ctctgcagga tatggtggcc ctctgtccta gagacacagc      300
caaagaagct ggagattggg tcagcacaat gtc                                   333

<210> 79
<211> 125
<212> PRT
<213> Mus musculus

<400> 79
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1               5                  10                  15
Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
            20                  25                  30
Tyr Met Asn Asn Trp Val Lys Gln Ser Pro Gly Lys Ser Leu Glu Trp
        35                  40                  45
Ile Gly Asp Ile Asn Pro Gly Asn Gly Gly Thr Ser Tyr Asn Gln Lys
    50                  55                  60
Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala
65                  70                  75                  80
Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr
```

```
                85                  90                  95
Cys Ala Arg Gly Tyr Tyr Ser Ser Ser Tyr Met Ala Tyr Tyr Ala Phe
            100                 105                 110
Asp Tyr Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser
        115                 120                 125

<210> 80
<211> 125
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 80
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1               5                  10                  15
Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Gly Tyr
            20                  25                  30
Val Met Asn Asn Trp Val Lys Gln Ser Pro Gly Gln Val Leu Glu Trp
        35                  40                  45
Ile Gly Asp Ile Asn Pro Gly Asn Gly Gly Thr Ser Tyr Asn Gly Lys
    50                  55                  60
Phe Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala
65                  70                  75                  80
Tyr Met Glu Leu Ser Gly Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr
                85                  90                  95
Cys Ala Arg Gly Glu Asn Ser Ser Ser Tyr Met Ala Tyr Tyr Ala Phe
            100                 105                 110
Asp Ser Trp Gly Gln Gly Ala Thr Val Thr Val Ser Ser
        115                 120                 125

<210> 81
<211> 112
<212> PRT
<213> Mus musculus

<400> 81
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1               5                  10                  15
Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Val Asp Ser Tyr
            20                  25                  30
Gly Asn Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
        35                  40                  45
Lys Leu Leu Ile Tyr Ala Ala Ser Asn Leu Glu Ser Gly Val Pro Ala
    50                  55                  60
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Asn Ile His
65                  70                  75                  80
Pro Val Glu Glu Asp Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Ser Asn
                85                  90                  95
Glu Asp Pro Pro Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100                 105                 110

<210> 82
<211> 112
<212> PRT
<213> Artificial Sequence
```

<220>
<223> majority sequence

<400> 82
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1   5   10   15
Gln Arg Ala Thr Ile Ser Cys Arg Ala Ser Glu Ser Val Asp Ser Tyr
            20   25   30
Gly Asn Ser Phe Met His Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro
        35   40   45
Asn Leu Leu Ile Phe Ala Ala Ser Ile Leu Glu Ser Gly Val Pro Ala
    50   55   60
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile His
65   70   75   80
Pro Val Glu Ala Asp Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Ser Ile
                85   90   95
Glu Asp Pro Pro Tyr Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
            100   105   110

<210> 83
<211> 363
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(363)

<400> 83
cag gtg cag cta aag gag tca gga cct ggc ctg gtg gcg tcc tca cag 48
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
 1   5   10   15

agc ctg tcc atc aca tgc acc gtc tca gga ttc tca tta acc gcc tat 96
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ala Tyr
            20   25   30

ggt att aac tgg gtt cgc cag cct cca gga aag ggt ctg gag tgg ctg 144
Gly Ile Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35   40   45

gga gtg ata tgg cct gat gga aac aca gac tat aat tca act ctc aaa 192
Gly Val Ile Trp Pro Asp Gly Asn Thr Asp Tyr Asn Ser Thr Leu Lys
    50   55   60

tcc aga ctg aac atc ttc aag gac aac tcc aag aac caa gtt ttc tta 240
Ser Arg Leu Asn Ile Phe Lys Asp Asn Ser Lys Asn Gln Val Phe Leu
65   70   75   80

aaa atg agc agt ttc caa act gat gac aca gcc aga tac ttc tgt gcc 288
Lys Met Ser Ser Phe Gln Thr Asp Asp Thr Ala Arg Tyr Phe Cys Ala
                85   90   95

aga gat tcg tat ggt aac ttc aag agg ggt tgg ttt gac ttc tgg ggc 336
Arg Asp Ser Tyr Gly Asn Phe Lys Arg Gly Trp Phe Asp Phe Trp Gly
            100   105   110

```
cag ggc acc act ctc aca gtc tcc tca                                    363
Gln Gly Thr Thr Leu Thr Val Ser Ser
        115                 120


<210> 84
<211> 121
<212> PRT
<213> Mus musculus

<400> 84
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
 1               5                  10                  15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ala Tyr
            20                  25                  30
Gly Ile Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
        35                  40                  45
Gly Val Ile Trp Pro Asp Gly Asn Thr Asp Tyr Asn Ser Thr Leu Lys
    50                  55                  60
Ser Arg Leu Asn Ile Phe Lys Asp Asn Ser Lys Asn Gln Val Phe Leu
65                  70                  75                  80
Lys Met Ser Ser Phe Gln Thr Asp Asp Thr Ala Arg Tyr Phe Cys Ala
                85                  90                  95
Arg Asp Ser Tyr Gly Asn Phe Lys Arg Gly Trp Phe Asp Phe Trp Gly
            100                 105                 110
Gln Gly Thr Thr Leu Thr Val Ser Ser
        115                 120

<210> 85
<211> 363
<212> DNA
<213> Mus musculus

<400> 85
tgaggagact gtgagagtgg tgccctggcc ccagaagtca aaccaacccc tcttgaagtt      60
accatacgaa tctctggcac agaagtatct ggctgtgtca tcagtttgga aactgctcat     120
ttttaagaaa acttggttct tggagttgtc cttgaagatg ttcagtctgg atttgagagt     180
tgaattatag tctgtgtttc catcaggcca tatcactccc agccactcca gacccttcc      240
tggaggctgg cgaacccagt taataccata ggcggttaat gagaatcctg agacggtgca     300
tgtgatggac aggctctgtg aggacgccac caggccaggt cctgactcct ttagctgcac     360
ctg                                                                   363

<210> 86
<211> 321
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)...(321)

<400> 86
aac att gtg atg acc cag tct caa aaa ttc atg tcc aca tca cca gga       48
Asn Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Pro Gly
 1               5                  10                  15
```

```
gac agg gtc agg gtc acc tgc aag gcc agt cag aat gtg ggt tct gat       96
Asp Arg Val Arg Val Thr Cys Lys Ala Ser Gln Asn Val Gly Ser Asp
             20                  25                  30

gta gcc tgg tat caa gcg aaa cca gga caa tct cct aga ata ctg att      144
Val Ala Trp Tyr Gln Ala Lys Pro Gly Gln Ser Pro Arg Ile Leu Ile
         35                  40                  45

tac tcg aca tcc tac cgt tac agt ggg gtc cct gat cgc ttc aca gcc      192
Tyr Ser Thr Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Ala
     50                  55                  60

tat gga tct ggg aca gat ttc act ctc acc att acc aat gtg cag tct      240
Tyr Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Asn Val Gln Ser
 65                  70                  75                  80

gaa gac ttg aca gag tat ttc tgt cag caa tat aat agc tat cct ctc      288
Glu Asp Leu Thr Glu Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                 85                  90                  95

acg ttc ggt gct ggg acc aag ctg gag ctg aaa                          321
Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
            100                 105
```

<210> 87
<211> 107
<212> PRT
<213> Mus musculus

<400> 87

```
Asn Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Pro Gly
 1               5                  10                  15
Asp Arg Val Arg Val Thr Cys Lys Ala Ser Gln Asn Val Gly Ser Asp
            20                  25                  30
Val Ala Trp Tyr Gln Ala Lys Pro Gly Gln Ser Pro Arg Ile Leu Ile
        35                  40                  45
Tyr Ser Thr Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Ala
    50                  55                  60
Tyr Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Asn Val Gln Ser
65                  70                  75                  80
Glu Asp Leu Thr Glu Tyr Phe Cys Gln Gln Tyr Asn Ser Tyr Pro Leu
                85                  90                  95
Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
            100                 105
```

<210> 88
<211> 321
<212> DNA
<213> Mus musculus

<400> 88

```
tttcagctcc agcttggtcc cagcaccgaa cgtgagagga tagctattat attgctgaca      60
gaaatactct gtcaagtctt cagactgcac attggtaatg gtgagagtga aatctgtccc     120
agatccatag gctgtgaagc gatcagggac cccactgtaa cggtaggatg tcgagtaaat     180
cagtattcta ggagattgtc ctggtttcgc ttgataccag gctacatcag aacccacatt     240
ctgactggcc ttgcaggtga ccctgaccct gtctcctggt gatgtggaca tgaatttttg     300
```

agactgggtc atcacaatgt t 321

<210> 89
<211> 121
<212> PRT
<213> Mus musculus

<400> 89
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
1 5 10 15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ala Tyr
20 25 30
Gly Ile Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45
Gly Val Ile Trp Pro Asp Gly Asn Thr Asp Tyr Asn Ser Thr Leu Lys
50 55 60
Ser Arg Leu Asn Ile Phe Lys Asp Asn Ser Lys Asn Gln Val Phe Leu
65 70 75 80
Lys Met Ser Ser Phe Gln Thr Asp Asp Thr Ala Arg Tyr Phe Cys Ala
85 90 95
Arg Asp Ser Tyr Gly Asn Phe Lys Arg Gly Trp Phe Asp Phe Trp Gly
100 105 110
Gln Gly Thr Thr Leu Thr Val Ser Ser
115 120

<210> 90
<211> 121
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

<400> 90
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
1 5 10 15
Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu Thr Ala Tyr
20 25 30
Gly Ile Asn Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu
35 40 45
Gly Val Ile Trp Pro Asp Gly Asn Thr Asp Tyr Asn Ser Thr Leu Lys
50 55 60
Ser Arg Leu Asn Ile Phe Lys Asp Asn Ser Lys Asn Gln Val Phe Leu
65 70 75 80
Lys Met Ser Ser Phe Gln Thr Asp Asp Thr Ala Arg Tyr Phe Cys Ala
85 90 95
Arg Asp Ser Tyr Gly Asn Phe Lys Arg Gly Trp Phe Asp Phe Trp Gly
100 105 110
Gln Gly Thr Thr Leu Thr Val Ser Ser
115 120

<210> 91
<211> 113
<212> PRT
<213> Mus musculus

<400> 91

```
Asp Ile Val Met Thr Gln Ser Pro Ser Ser Leu Ala Val Ser Ala Gly
 1               5                  10                  15
Glu Lys Val Thr Met Ser Cys Lys Ser Ser Gln Ser Leu Leu Asn Ser
            20                  25                  30
Gly Asn Gln Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
        35                  40                  45
Ser Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Asn
                85                  90                  95
Asp Tyr Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
            100                 105                 110
Lys
```

<210> 92
<211> 115
<212> PRT
<213> Artificial Sequence

<220>
<223> majority sequence

```
<400> 92
Asp Ile Val Met Thr Gln Ser Gln Ser Ser Leu Ala Val Ser Ala Gly
 1               5                  10                  15
Asp Lys Val Thr Val Ser Cys Lys Ala Ser Gln Ser Leu Leu Asn Val
            20                  25                  30
Gly Ser Asp Lys Asn Tyr Val Ala Trp Tyr Gln Ala Lys Pro Gly Gln
        35                  40                  45
Ser Pro Lys Leu Leu Ile Tyr Ser Ala Ser Thr Arg Glu Ser Gly Val
    50                  55                  60
Pro Asp Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65                  70                  75                  80
Ile Ser Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Phe Cys Gln Asn
                85                  90                  95
Asp Asn Ser Tyr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu
            100                 105                 110
Lys Arg Ala
        115
```

<210> 93
<211> 10
<212> PRT
<213> Mus musculus

```
<400> 93
Gly Tyr Thr Phe Thr Gly Tyr Val Met His
 1               5                  10
```

<210> 94
<211> 17
<212> PRT
<213> Mus musculus

<400> 94
Tyr Ile Asn Pro Tyr Asn Asp Val Thr Arg Tyr Asn Gly Lys Phe Lys
 1   5   10   15
Gly

<210> 95
<211> 9
<212> PRT
<213> Mus musculus

<400> 95
Gly Glu Asn Trp Tyr Tyr Phe Asp Ser
 1   5

<210> 96
<211> 15
<212> PRT
<213> Mus musculus

<400> 96
Arg Ala Ser Glu Ser Ile Asp Ser Tyr Asp Asn Thr Phe Met His
 1   5   10   15

<210> 97
<211> 7
<212> PRT
<213> Mus Musculus

<400> 97
Arg Ala Ser Ile Leu Glu Ser
 1   5

<210> 98
<211> 9
<212> PRT
<213> Mus musculus

<400> 98
His Gln Ser Ile Glu Asp Pro Tyr Thr
 1   5

<210> 99
<211> 10
<212> PRT
<213> Mus musculus

<400> 99
Gly Phe Ser Leu Thr Ala Tyr Gly Ile Asn
 1   5   10

<210> 100
<211> 16
<212> PRT
<213> Mus musculus

<400> 100

Val Ile Trp Pro Asp Gly Asn Thr Asp Tyr Asn Ser Thr Leu Lys Ser
1 5 10 15

<210> 101
<211> 13
<212> PRT
<213> Mus musculus

<400> 101
Asp Ser Tyr Gly Asn Phe Lys Arg Gly Trp Phe Asp Phe
1 5 10

<210> 102
<211> 11
<212> PRT
<213> Mus musculus

<400> 102
Lys Ala Ser Gln Asn Val Gly Ser Asp Val Ala
1 5 10

<210> 103
<211> 7
<212> PRT
<213> Mus musculus

<400> 103
Ser Thr Ser Tyr Arg Tyr Ser
1 5

<210> 104
<211> 9
<212> PRT
<213> Mus musculus

<400> 104
Gln Gln Tyr Asn Ser Tyr Pro Leu Thr
1 5

<210> 105
<211> 25
<212> PRT
<213> Mus musculus

<400> 105
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15
Ser Val Lys Met Ser Cys Lys Ala Ser
20 25

<210> 106
<211> 14
<212> PRT
<213> Mus musculus

<400> 106
Trp Val Lys Gln Lys Pro Gly Gln Val Leu Glu Trp Ile Gly

```
 1               5                   10

<210> 107
<211> 32
<212> PRT
<213> Mus musculus

<400> 107
Lys Ala Thr Leu Thr Ser Asp Lys Tyr Ser Ser Thr Ala Tyr Met Glu
 1               5                   10                  15
Leu Ser Gly Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys Ala Arg
            20                  25                  30

<210> 108
<211> 11
<212> PRT
<213> Mus musculus

<400> 108
Trp Gly Arg Gly Ala Thr Leu Thr Val Ser Ser
 1               5                   10

<210> 109
<211> 82
<212> PRT
<213> Mus musculus

<400> 109
Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1               5                   10                  15
Ser Val Lys Met Ser Cys Lys Ala Ser Trp Val Lys Gln Lys Pro Gly
            20                  25                  30
Gln Val Leu Glu Trp Ile Gly Lys Ala Thr Leu Thr Ser Asp Lys Tyr
        35                  40                  45
Ser Ser Thr Ala Tyr Met Glu Leu Ser Gly Leu Thr Ser Glu Asp Ser
    50                  55                  60
Ala Val Tyr Tyr Cys Ala Arg Trp Gly Arg Gly Ala Thr Leu Thr Val
65                  70                  75                  80
Ser Ser


<210> 110
<211> 23
<212> PRT
<213> Mus musculus

<400> 110
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1               5                   10                  15
Gln Arg Ala Thr Ile Ser Cys
            20

<210> 111
<211> 15
<212> PRT
<213> Mus musculus
```

<400> 111
Trp Tyr Gln Gln Lys Pro Gly Gln Pro Pro Asn Leu Leu Ile Phe
 1   5   10   15

<210> 112
<211> 32
<212> PRT
<213> Mus musculus

<400> 112
Gly Ile Pro Ala Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr
 1   5   10   15
Leu Thr Ile Tyr Pro Val Glu Ala Asp Asp Val Ala Thr Tyr Tyr Cys
            20   25   30

<210> 113
<211> 10
<212> PRT
<213> Mus musculus

<400> 113
Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
 1   5   10

<210> 114
<211> 80
<212> PRT
<213> Mus musculus

<400> 114
Asp Ile Val Leu Thr Gln Ser Pro Ala Ser Leu Ala Val Ser Leu Gly
 1   5   10   15
Gln Arg Ala Thr Ile Ser Cys Trp Tyr Gln Gln Lys Pro Gly Gln Pro
            20   25   30
Pro Asn Leu Leu Ile Phe Gly Ile Pro Ala Arg Phe Ser Gly Ser Gly
        35   40   45
Ser Gly Thr Asp Phe Thr Leu Thr Ile Tyr Pro Val Glu Ala Asp Asp
    50   55   60
Val Ala Thr Tyr Tyr Cys Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
65   70   75   80

<210> 115
<211> 25
<212> PRT
<213> Mus musculus

<400> 115
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
 1   5   10   15
Ser Leu Ser Ile Thr Cys Thr Val Ser
            20   25

<210> 116
<211> 14
<212> PRT
<213> Mus musculus

<400> 116
Trp Val Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Leu Gly
 1   5   10

<210> 117
<211> 32
<212> PRT
<213> Mus musculus

<400> 117
Arg Leu Asn Ile Phe Lys Asp Asn Ser Lys Asn Gln Val Phe Leu Lys
 1   5   10   15
Met Ser Ser Phe Gln Thr Asp Asp Thr Ala Arg Tyr Phe Cys Ala Arg
            20   25   30

<210> 118
<211> 11
<212> PRT
<213> Mus musculus

<400> 118
Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser
 1   5   10

<210> 119
<211> 82
<212> PRT
<213> Mus musculus

<400> 119
Gln Val Gln Leu Lys Glu Ser Gly Pro Gly Leu Val Ala Ser Ser Gln
 1   5   10   15
Ser Leu Ser Ile Thr Cys Thr Val Ser Trp Val Arg Gln Pro Pro Gly
            20   25   30
Lys Gly Leu Glu Trp Leu Gly Arg Leu Asn Ile Phe Lys Asp Asn Ser
        35   40   45
Lys Asn Gln Val Phe Leu Lys Met Ser Ser Phe Gln Thr Asp Asp Thr
    50   55   60
Ala Arg Tyr Phe Cys Ala Arg Trp Gly Gln Gly Thr Thr Leu Thr Val
65   70   75   80
Ser Ser

<210> 120
<211> 23
<212> PRT
<213> Mus musculus

<400> 120
Asn Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Pro Gly
 1   5   10   15
Asp Arg Val Arg Val Thr Cys
            20

<210> 121
<211> 15
<212> PRT

<213> Mus musculus

<400> 121
Trp Tyr Gln Ala Lys Pro Gly Gln Ser Pro Arg Ile Leu Ile Tyr
 1   5   10   15

<210> 122
<211> 32
<212> PRT
<213> Mus musculus

<400> 122
Gly Val Pro Asp Arg Phe Thr Ala Tyr Gly Ser Gly Thr Asp Phe Thr
 1   5   10   15
Leu Thr Ile Thr Asn Val Gln Ser Glu Asp Leu Thr Glu Tyr Phe Cys
            20   25   30

<210> 123
<211> 10
<212> PRT
<213> Mus musculus

<400> 123
Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
 1   5   10

<210> 124
<211> 80
<212> PRT
<213> Mus musculus

<400> 124
Asn Ile Val Met Thr Gln Ser Gln Lys Phe Met Ser Thr Ser Pro Gly
 1   5   10   15
Asp Arg Val Arg Val Thr Cys Trp Tyr Gln Ala Lys Pro Gly Gln Ser
            20   25   30
Pro Arg Ile Leu Ile Tyr Gly Val Pro Asp Arg Phe Thr Ala Tyr Gly
        35   40   45
Ser Gly Thr Asp Phe Thr Leu Thr Ile Thr Asn Val Gln Ser Glu Asp
    50   55   60
Leu Thr Glu Tyr Phe Cys Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys
65   70   75   80

<210> 125
<211> 348
<212> DNA
<213> Mus musculus

<400> 125
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ccagagaagg ggcttgagtg ggttgctgaa attagatcgc aatctaataa ttttgcaaca 180
cattatgcgg agtctgtgaa agggagggtc atcatctcaa gagatgattc caagagtagt 240
gtctacctgc aaatgaacaa cttgagagct gaagacactg gcatttatta ctgtaccagg 300
cgatggaata atttctgggg ccaaggcacc actctcacag tctcctca   348

<210> 126

<211> 348
<212> DNA
<213> Mus musculus

<400> 126
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ataaatgcca gtgtcttcag ctctcaagtt gttcatttgc aggtagacac tactcttgga 120
atcatctctt gagatgatga ccctcccttt cacagactcc gcataatgtg ttgcaaaatt 180
attagattgc gatctaattt cagcaaccca ctcaagcccc ttctctggag actggcggac 240
ccagttcatc cagtaattac tgaaagtgaa tccagaggca acacaggaga gtttcatgga 300
tcctccaggt tgcaccaagc ctcctccaga ctcctcaagc ttcacttc 348

<210> 127
<211> 321
<212> DNA
<213> Mus musculus

<400> 127
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gaacagtctc ctaagatgtt gatatacggg gcatccaacc ggttcactgg ggtccccgat 180
cgcttcacag gcagtggatc tgcaacagat ttcattctga ccatcagcag tgtgcagact 240
gaagaccttg tagattatta ctgtggacag agttacacct ttccgtacac gttcggaggg 300
gggaccaagc tggaaatgaa g 321

<210> 128
<211> 321
<212> DNA
<213> Mus musculus

<400> 128
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gtaataatct acaaggtctt cagtctgcac actgctgatg gtcagaatga aatctgttgc 120
agatccactg cctgtgaagc gatcggggac cccagtgaac cggttggatg ccccgtatat 180
caacatctta ggagactgtt ctggtttctg ttgataccag gacacataag tacccacatt 240
ctcactggcc ttgcaggtca aggtgaccct ctctcctact gaaatggaca tggatttggg 300
aaattgggtc attacaatgt t 321